

Single-Step Conversion from RGB Bayer Pattern to YUV 4:2:0 Format

Abstract of Disclosure

Bayer-pattern pixels captured by an image sensor have only one of the three primary colors (RGB) per pixel location. Rather than interpolate the Bayer-pattern to generate the missing RGB color components for each pixel location, a direct conversion is performed to YUV pixels. A luminance calculator receives a 3x3 block of Bayer-pattern pixels and generates a luminance (Y) pixel for the center pixel location. Different coefficients are multiplied by each of the 9 Bayer-pattern pixels before summing to produce the center Y pixel, depending on the pattern location. A chrominance calculator first receives a 3x3 block of Y pixels generated by the luminance calculator. The 9 Y pixels are averaged to produce an average luminance. Two red or blue pixels in the 3x3 block are averaged and the average luminance subtracted. Then a constant is multiplied to generate the U and V pixels. Intermediate interpolated RGB avoided.

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Figures

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